

Illinois.—Cairo and Windsor, 21st; Rockford, 24th.
Indiana.—Jeffersonville, 14th; Logansport, 24th, 28th; Butlerville, Laconia, and Vevay, 28th.
Indian Territory.—Fort Reno, 22d.
Iowa.—Des Moines, 10th; Dubuque, 22d; Keokuk, 25th, 27th; Clinton, 27th.
Kansas.—Fort Hays, 20th; Globe, Marydale Farm, Manhattan, and Wakefield, 21st; Independence, 22d; El Dorado, 27th.
Kentucky.—Harper's Ferry, 28th.
Maryland.—Ocean City, 18th.
Michigan.—Mackinaw City, 4th; Lansing, 29th.
Minnesota.—Moorhead, 11th; Saint Paul, 14th.
Mississippi.—Vicksburg, 21st.
Missouri.—Saint Louis, 21st, 22d; Centreville, 26th; Springfield, 30th.
Montana.—Poplar River, 30th.
Nebraska.—Fort Robinson, Omaha, and Valentine, 10th; Marquette, 23d.
Nevada.—Winnemucca, 20th.
New Jersey.—Beverly, Dover, and Moorestown, 18th.
New Mexico.—Santa Fé, 16th, 18th; Fort Union, 19th.
New York.—Menands, 12th; Palmyra, 14th; Rochester, 15th; Setauket, 18th; Humphrey, 21st, Oswego, 23d.
North Carolina.—Reidsville, 1st; Smithville, 20th.
Ohio.—Jacksonborough, 15th, 18th; Sandusky, Elyria, and Garrettsville, 18th; Toledo, 27th; Napoleon, Portsmouth, Wauseon, Westerville, and Yellow Springs, 28th.
Oregon.—Albany, 2d, 10th, 12th, 17th, 30th; East Portland, 14th; Portland, 17th, 29th, 30th.
Pennsylvania.—Dyberry, 15th; Bethlehem, Fallsington, Grampian Hills, Quakertown, and Wellsborough, 18th; Pittsburgh, 28th.
South Carolina.—Spartanburg, 15th; Stateburg, 15th, 16th; Kirkwood, 16th.
Tennessee.—Nashville, 28th.
Texas.—Fort Davis, 8th, 12th; Silver Falls, 12th; Cleburne, 30th.
Utah.—Frisco, 16th.
Vermont.—Charlotte, 28th.
Virginia.—Wytheville and Dale Enterprise, 15th; Lynchburg and University of Virginia, 18th, 28th; Marion and Variety Mills, 28th.
Washington Territory.—Fort Townsend, 17th; Spokane Falls, 24th.
West Virginia.—Middlebrook, 15th; Parkersburg, 27th, 28th.
Wisconsin.—Madison, 22d; Beloit, 24th; Green Bay, 28th.
Wyoming.—Fort Laramie, 18th

SLEET.

Sleet fell in the various states and territories during the month, as follows: Fort Apache, Ariz., 11th; Lead Hill, Ark., 4th; North Colebrook, Conn., 13th, 18th; New Haven, Conn., 18th; Fort Totten, Dak., 9th, 10th, 11th, 14th; Bismarck, Dak., 11th; Fort Sully, Dak., 22d; Charleston, Ill., 18th; Jacksonville, Ill., 20th; Indianapolis, Ind., 17th, 18th; Keo-

kuk, Iowa, 17th; Cresco and Cedar Rapids, Iowa, 24th; Eastport, Me., 2d, 3d; Boston, Mass., 18th; Fort Brady, Mich., 3d, 11th; Marquette, Mich., 11th; Central College, Mo., 17th, 18th; Valentine, Nebr., 14th, 22d; Hay Springs, Nebr., 21st, 22d, 23d; Beverly, N. J., 18th; New York City, 18th; Garrettsville and Tiffin, Ohio, 18th; Wauseon, Ohio, 18th, 24th, 27th; Bethlehem, Pa., 18th; Erie, Pa., 26th; Frisco, Utah, 30th; Norfolk, Va., 1st; La Crosse, Wis., 22d; Milwaukee, Wis., 23d, 24th.

DROUGHT.

Although rain accompanied the area of low that crossed Texas, the Indian Territory, and Kansas on the 18th, yet at the end of the month the long drought was practically unbroken, except in Kansas, where the rainfall of the 18th was quite heavy. In Texas the drought now extends from the western grazing country eastward to Louisiana, but decreases in severity as it approaches the eastern boundary. In central and eastern Texas, embracing the principal cotton-growing counties of the state, only a few light showers have fallen during the month. Reports from places in Missouri, Iowa, and northern Illinois state that crops were suffering from the lack of rain; in central Missouri considerable rain fell during the latter half of the month.

The following notes are from observers:

At San Antonio, Tex., although light rain fell on the 4th, 9th, 10th, 11th, 13th, 14th, and 16th, the total precipitation of the month was only 0.60 of an inch. Reports from adjoining counties indicate that their condition is even worse than the country immediately adjacent to San Antonio. The observer states that the dry grass from last year is exhausted, and as none has grown this spring the only forage for cattle is the prickly pear. Stock are dying rapidly. Numbers of families have deserted their homes and farms in search of a more favored locality. All hope of making the usual grain crop this season has been abandoned.

New Ulm, Austin Co., Tex.: all interests are suffering from the drought; cattle are in need of grass and water; corn and cotton are in bad condition and will have to be replanted if rain falls. The normal April rainfall for this section, as deduced from the observations of the past fifteen years, is 3.84 inches; the total of the current month is only 0.17 inch, and is the least that has fallen in any April during that time. The normal rainfall of the seven months ending April 30th is 31.70 inches; the total amount of the corresponding months in 1886-'87 is 7.92, a deficiency of 23.78. In 1873 eight inches of rain fell in April.

Bellefonte, Republic Co., Kans.: the first seventeen days of the month were remarkable for dry weather and the frequency and force of dust storms. On the 3d and 9th, during wind storms, dust filled the air to such an extent that buildings one hundred feet distant were visible only at intervals.

Independence, Montgomery Co., Kans.: the first heavy rain in this section since September 4, 1886, fell on the 16th and 17th. On the 3d, during a wind storm, the sky was obscured by dust.

Salina, Salina Co., Kans.: the month has been unusually dry, the total precipitation, 2.06 inches, being the least that has fallen in any April during the past five years.

Grand Coteau, Saint Landry Parish, La.: the total amount of rainfall for the five months from December, 1886, to April, 1887, inclusive, 12.20 inches, is less than one-half of the normal amount; the soil is dry and crops late.

Vicksburg, Miss.: on the 18th a gale, with very heavy rain, occurred, breaking the drought that had prevailed throughout this section. Crops of all kinds were backward, and, except where irrigated by the overflow of the river, no cotton had made its appearance above ground.

Tucson, Ariz.: cattle are dying in large numbers from want of water and food; the Rillito River is dry for the first time in many years.

WINDS.

The most frequent directions of the wind during April, 1887, are shown on chart ii by the arrows flying with the wind; they are also given in the table of miscellaneous data. The general movement of the air along the Atlantic coast, in New England, and the Middle States, has been from the northwest; in the Gulf States, Ohio Valley, Lake region, and the central Mississippi valley, from the south or southwest; in Dakota and the Missouri Valley, from the north or northwest; in California, from the west or northwest. In the remaining districts no general direction has prevailed.

HIGH WINDS (in miles per hour).

Wind-velocities of fifty or more miles per hour, other than

the maximum velocities for the month, which are given in the table of miscellaneous data:

Mount Washington, N. H., 60, ne., 2d; 92, nw., 3d; 89, nw., 6th; 71, nw., 8th; 92, nw., 10th; 96, nw., 11th; 61, nw., 12th; 58, nw., 13th; 50, nw., 18th; 59, n., 19th; 58, nw., 20th; 66, s., 23d; 51, s., 24th; 50, nw., 25th; 62, nw., 26th; 70, nw., 27th; 78, s., 28th; 60, se., 29th; 85, nw., 30th.

Pike's Peak, Colo., 59, nw., 1st; 65, w., 3d; 58, w., 4th; 52, sw., 11th; 52, nw., 19th; 70, w., 20th; 52, nw., 22d; 60, n., 25th; 52, w., 26th.

Dodge City, Kans., 51, nw., 22d.

Fort Elliott, Tex., 56, nw., 22d.

Report of tornadoes for the month of April, 1887, by Lieut. John P. Finley, Signal Corps, U. S. Army, Assistant.

Place.	Date.	Time.	Direction.	Form of cloud.	Number of persons killed.	Number of persons wounded.	Width of path.	Number and kind of animals killed.	Number and kind of buildings destroyed.	Total valuation of property destroyed.	Authority.
Ackworth, Ga.	3	8.30 p. m.	e.	.....	None	None	Feet.	.....	4 houses destroyed and several damaged.	.....	D. B. Painter, Dayton, Tenn.
Beaudry, Minn. a.....	9	4 to 5 p. m.	ne.	Cone	None	None	Narrow	.....	Several houses.....	.....	J. T. Beaudry, Beaudry, Minn.
Fairport, N. Y.	15	5 p. m.	e.	Funnel	None	None	Narrow	.....	Several houses and barns.	.....	Dr. M. A. Veeder, Lyons, N. Y.
Saint Clairville and Martin's Ferry, Ohio. b	15	3.20 p. m.	ne.	Funnel	None	Many	90 to 600	Several horses and cattle.	About 200 of all kinds.	\$250,000	Judge John S. Cochran, Martin's Ferry, Ohio; A. V. McDonald, Burton, W. Va.; John Cook, Bridgeport, and J. P. Harvey, Union, Ohio.
Pittsborough, N. C.	18	Noon	.....	.....	None	Several	1,200	.....	Many houses and out-buildings.	.....	T. B. Farrar, Bellevoir, N. C.
Myrtle Station, Va. c.....	18	6.30 p. m.	ne.	Funnel	2	Several	300 to 600	Many	A great many houses, barns, and out-buildings.	.....	W. M. Bealon, Boykins, J. R. Purdie, Smithfield, F. A. Heines, Suffolk, and G. T. Atkins, Myrtle Station, Va.
Jonesborough, Ala. d.....	18	3 a. m.	ne.	Funnel	None	None	Narrow	.....	Many houses and out-buildings.	.....	Dr. Frank Prince, Jonesborough, Ala.
Ridgedale, Tenn. e.....	18	4.30 a. m.	ne.	Funnel	None	None	Narrow	.....	Many	10,000	The Chattanooga "Commercial" and Signal Service observer, Chattanooga, Tenn.
Prescott, Kans. f.....	21	5.30 p. m.	e., ne.	Funnel	20	237	600 to 2,640	.....	330 of all kinds	1,000,000	W. Fred Gentle, Mound City, F. R. Gray, Yates Centre, J. E. Ireland, Iola, C. E. Duvall, Lone Elm, D. P. Carson, Blue Mound, Dr. G. M. Haines, La Harpe, Kans.; S. G. Craig, Ohio, D. N. Hill, Hume, and J. F. Llewellyn, Mexico, Mo.
Mossom Prairie, Tex.	22	8.30 a. m.	ne.	.....	None	None	Narrow	.....	Several houses, stores, and out-buildings.	4,200	Dr. R. Deming, Mossville, Tex.
Carmi, Ill. g.....	22	11.45 p. m.	ne.	.....	None	None	Narrow	A large number of birds by hail.	.....	.....	Daniel Berry, Carmi, Ill.
Millport, Ala. h.....	22	6 p. m.	.....	Funnel	None	None	900	None	Many	.....	D. C. Hodo, Carrollton, Ala.
Near Cave Springs, Ga. i.....	22	8 p. m.	easterly	.....	None	None	300	Considerable.	Many barns, cabins, fences, and trees.	.....	J. H. Dent, Cave Spring, Ga.
Atchison, Kans.	22	2.30 p. m.	se.	.....	None	None	.....	.....	.....	.....	J. E. Bamfield, Atchison, Kans.
Near Yates Centre, Kans. j.....	22	Early a. m.	.....	.....	None	None	.....	.....	.....	.....	F. R. Gray, Yates Centre, Kans.
Buena Vista, Ind. k.....	22	6.30 p. m.	ne.	Funnel	2	Several	375 to 2,640	None	Several houses and out-buildings.	.....	J. H. Briner, Hazleton, G. T. Kimlost, Union, C. D. Courtright, Decker, Ind.
Paris, Ky. l.....	22	8 a. m.	s. 53° e.	.....	None	None	900 to 1,200	.....	Many houses, barns, and out-buildings.	.....	J. W. Fox, Paris, Ky.
Huntington, Miss. m.....	22	4 p. m.	ne.	.....	None	Many	Narrow	.....	Many houses	.....	J. A. Salter, Crawford, Miss.
Near Mount Carmel, Ill. n.....	22	6 p. m.	ne.	Funnel	2	Several	210 to 1,320	.....	Destroyed everything in its path.	50,000	James Pool, Mount Carmel, Ill.; W. O. Fisher, Potoka, Ind.
Near Clarksville, Ark. o.....	22	6.30 a. m.	e., ne.	Funnel	20	75-100	300 to 900	A large number.	Destroyed everything in its path.	150,000	E. C. Bradley, Dover, J. D. Denney, Laurel, H. S. Sewers, Alma, and J. M. Bench, Cole Hill, Ark.
Evansville, Ind. p.....	25	10 a. m.	ne.	Funnel	None	None	90 to 120	.....	Many houses, barns, and out-buildings.	.....	L. Stansbury and J. W. Laner, Evansville, Ind.
Chatham and Wake counties, N. C.	25	Midday	ne.	Funnel	None	2	900 to 1,200	.....	Many houses, sheds, and out-buildings.	.....	L. T. Brown, Sanford, H. L. Kimrey, Soapstone Mount, and G. W. Harmon, Kimbletown, N. C.
Near Wade's Mill, Ky.	28	Afternoon	se.	.....	None	None	Narrow	.....	Many houses and barns.	.....	C. C. Priest, Wade's Mill, Ky.
Soapstone Mount, N. C.	28	4.30 p. m.	easterly	.....	None	None	Narrow	None	Several destroyed	.....	H. L. Kimrey, Soapstone Mount, N. C.
Fort Sill, Ind. T. q.....	29	8 p. m.	ne.	Funnel	None	None	7,920 to 10,560	None	Many badly damaged.	.....	Signal Service observer, Fort Sill, Ind.
Walnut Springs, Tex. r.....	29	9 p. m.	se.	.....	.....	.....	Narrow	.....	1 church, several houses.	.....	T. A. Etheridge, Clifton, "Morning News," Dallas, Tex.
Mossville, Tex.	29	9 p. m.	ne.	.....	None	None	.....	.....	.....	.....	R. Deming, Mossville, Tex.
Near Cleburne, Tex.	30	1.30 p. m.	se.	.....	None	Several	Narrow	None	Many	.....	Dr. T. C. Osborn, Cleburne, Tex.

a A black cloud, rapidly approaching from the northwest.

b The tornado cloud was accompanied by a whistling, roaring sound; was very black, dense, and broad, say a mile in its broadest portion, becoming two hundred yards at the point near the ground. It appeared to be about a quarter of a mile high and looked like an inverted funnel of thick, gray smoke whirling around like a great top; light, fleecy clouds encircled the upper portion of funnel.

c Large pillars of white, fleecy clouds above the main cloud, moving rapidly; they shaded off to a very dark, angry looking cloud, and were accompanied by a loud, roaring noise.

d Cloud black and very angry looking.

e Cloud very black at the point and of a dull, lead color at the top; approached with a loud, roaring noise.

f The tornado cloud consisted of from four to seven cone-shaped clouds, the two central ones being as large as all the others together; they were very black, with light, fleecy clouds encircling the top. It was accompanied by a roaring noise.

g Cloud accompanied by a dull, heavy, rumbling roar, which appeared to come from a considerable height in the air.

h Cloud very dark and approached with a loud, roaring noise.

i Cloud very dark and ragged.

j The cloud passed over the city at a considerable elevation, occasionally touching the earth.

k The cloud was very dark and black, with a greenish hue.

l A dark looking cloud, but broken up and apparently in great agitation as if disturbed by some strange influence.

m Dark, heavy cloud approached with a roaring noise.

n Cloud very black, accompanied by a roaring noise.

o Tornado originated in Indian Territory and remained high in the air until it struck the Ozark Mountains. Two miles from Ozark it separated, one part going south and the other north, the former destroying all in its path, when it rose and moved northeast; the part that went north moved three miles northeast of the town. When about five miles east of Ozark, the two reunited and began their work of destruction.

p A large, black cloud, cone-shaped, accompanied by a rumbling noise. The cloud burst over the town with the noise of a cannon, after which the wind suddenly ceased.

q A dense, black cloud formed in the northwest and remained stationary for about an hour, when a small cloud of a steel-blue color was seen to rise a little in advance of the first cloud, having a whirling motion.

r Cloud formed and remained at a considerable height while passing Mossville.